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From: Libby Smith [mailto:libbysmith@comcast.net]
Sent: Saturday, May 24, 2008 7:56 AM
To: Easterling, Deborah; Terreni, Charles
Cc: 'Hudson, Shannon'; Chairman.Hamilton; ViceChairman.Moseley; Commissioner.Howard; Commissioner.Wright; Commissioner.Mitchell; Commissioner.Fleming; Commissioner.Clyburn; chassneed@comcast.net; 'David Odell'; 'John Ramsburgh'
Subject: PSC Website Comments: Net Metering

Public Service Commission have asked the utilities to put together a chart to explain their net metering options clearly to customers. I am not aware that they have done that.

I have put together a handout on proposed net metering tariffs (with a focus on SCE&G) and the avoided cost "sell-all" option plus PACE currently available. I that I think the commissioners may find helpful. I have been using this as a basis for presentations on net metering to interested groups.

I have also included a chart on the "flat rate" options for all the utilities since these are the only rates currently in effect

South Carolina Small Power Generation Rates
"sell all" - an alternative to net metering tariffs

Details

Utility	Seller Charges	Tariff	Energy Payments (for electricity generated)						Capacity Payments (for capacity built)					
			All Year		Summer		Winter		All Year		Summer		Winter	
			On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak
SCE&G	$4.0000	pr-1	na	na	$0.0778	$0.0588	$0.0636	$0.0559	$0.0155	none	na	na	na	na
Progress Energy	$4/<10kw	csp-23	$0.0472	$0.0344	na	na			na	na	$0.0295		$0.0263	
Duke Energy		pp(sc)												
"Interconnected to distribution"	$6.23 + $8.03	*variable*	$0.0544	$0.0390	na	na	na	na	$0.0218	$0.0043	na		na	
		5yr fixed	$0.0536	$0.0403					$0.0234	$0.0046				
"Interconnection to transmission"	$6.23 + $8.03	*variable*	$0.0521	$0.0376	na	na	na	na	$0.0209	$0.0041	na		na	
		5yr fixed	$0.0514	$0.0388					$0.0225	$0.0044				

Summary

	Seller Charges	Tariff	Total KWH Payments from utilities (Energy + Capacity)					
			All Year		Summer		Winter	
			On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak
SCE&G	$4	pr-1			$0.0932	$0.0588	$0.0791	$0.0559
Progress Energy	$4/<10kw;	csp-23			$0.0767	$0.0639	$0.0735	$0.0606
Duke Energy		pp(sc)						
"Interconnected to distribution"	$6.23 + $8.03	*variable*	$0.0762	$0.0433				
		5yr fixed	$0.0770	$0.0449				
"Interconnection to transmission"	$6.23 + $8.03	*variable*	$0.0730	$0.0417				
		5yr fixed	$0.0739	$0.0432				

Bottomline

Customer Pays Seller Charges and receives either summer peak rate or winter off peak rate plus PACE rate for excess power sent to grid

	Seller Charge	Summer KWHr Payment	Winter KWHr Payment	KWHr Payments from Palmetto Clean Energy (proposed)
SCE&G	$4	$0.0932	$0.0559	$0.15
Progress	$4	$0.0767	$0.0606	$0.15
Duke (approximate)	$14.26	$0.0750	$0.0430	$0.15

Definition sof Summer and Peak

	Summer	Year Round Peak	Summer Peak	Winter Peak
SCE&G	june - sept m-f	na	10am - 10 pm m-f	6am -10am, 5pm- 10pm m-f
Progress Energy	apr-sept m-f	na	10 am - 10 pm m-f	6am - 10am 4pm - 9pm m-f
Duke Energy	na	7am - 11 pm m-f		

Customer Power Generators and SCE&G in South Carolina

Residences and businesses generating their own power "on the grid"

Power customers who become "small generators" can choose whether or not to have battery banks as part of their home generation system. Battery banks allow the customer generator to store an excess electricity they generate and then directly used that stored energy when they are not generating enough energy for their needs.

As an alternative to the expense and complexity of batteries, customer generators without batteries can use "the grid" as the equivalent of storage battery. Any excess power generated is delivered to the grid from the customer generator. This electricity is then used by nearby neighbors. Through some version of "net metering" the utility stores a financial credit for the customer generator. The customer can then use this credit to offset the cost of electricity consumed from the grid when they are not generating enough electricity for their needs.

Building a renewable home generation system is much more affordable when the cost of batteries can be avoided. "Net metering" arrangements are critical to the economics of home generation without batteries. Net metering should enable a home generator to get the full value of all the electricity they generate– not just the value energy which they can consume as they generate it.

Summary:

In SC, customer generators of SCE&G, Duke and Progress will have two options for interacting with the power company:

1. "Net Metering" under Rate 7, a time-of-use/demand rate''
   As proposed, this option is not very attractive. Customers must give up their current predictable, understandable flat rate and switch to Rate 7 which is complex and unpredictable. There is a significant chance that Rate 7 will result in raising your monthly energy cost before you can begin adding solar panels to reduce that cost. SCE&G's proposed 'demand charge' (see below) is punitive – it is twice as high as Progress Energy's demand charge. The economics of this options are very hard to predict. *This option is under consideration by the Public Service Commission. It is not actually available to customers at this time.*

2. "Sell All" small power generation under tariff PR-1. The customer generator will deliver all energy generated to the grid and buy all energy which they use from the grid. The customer will not directly use the energy they generator. The utility will pay the customer generator based on "time-of-generation" rates.

3. Additionally, some customers will be able to join the Palmetto Clean Energy program (as funding becomes available) and receive significant additional payments for each kw generated. "Sell All" is currently available for up to 25 customers and is a much better "deal" than the net metering proposals. This option will give the customer between 20 cents and 24 cents/ kwh generated for the full output of their customer generation system.

"Time of Use" Rate Structures

Understanding the economics of interacting with the power company requires an understanding of **peak** and **non peak** rates and **summer** and **winter** rates.

Most SCE&G customers currently pay a flat rate for electricity – that is the rate is the same no matter when the customer uses that electricity. Most customer's current residential rates look like this:

Rate 8 - Good Cents Rate		
	Facilities Charge	Energy Charge/kwh
	$7.89	
1st 800 kw		$0.09
Above 800kw		$0.10

Using flat rates like these, it is easy for a customer to predict the impact of reducing their electricity demand by conservation or home generation. Historical monthly kw usage is available at the SCE&G website. Electricity is the same cost regardless of when you use that electricity.

With time of use rate structures, the rate being charged for electricity at a given time is a function of whether it is 'winter' or 'summer' and whether the time of day and day of the week is considered a time of 'peak load" or "non-peak' load. For SCE&G (although not for our other power companies) Summer is June through September. Which hours are "peak demand" are different depending on whether you are using the proposed net metering rate under Rate 7 or a 'sell all" contract.

Explanation of Simple Net Metering:

With classic net metering, the power generated is used directly in the customer's home/business. This power directly offsets the power that the customer would have purchased from the power company. This generates an immediate savings. The value (savings) of this direct consumption is the rate in effect when the customer generates and uses that power.

If a customer generates more power than their home/business can consume, the excess is delivered to the grid where is it used by other power company customers. The power meter tracks this excess generation and creates a "credit" for this power.

Under simple net metering, at the end of the month, the single meter shows a net credit for excess power generated or an amount owed for the power consumed and not "offset" by excess generation. If the customer generator has delivered more excess power to the grid, a credit would carry forward to the next month.

In general, the customer generator seldom accumulates much of a 'net credit' over time. However, the customer's ability to draw down the credits generated during the month and over the year, increases the value from their home generation system. Without net metering, excess generator is simply wasted . Instead, the value of this excess generation is "time shifted" and captured.

SCE&G Net Metering Proposal -- Rate 7: a Time of Use/Demand Rate

Note: These rates have not been approved by the Public Service Commission. Consequently net metering is not currently available in SC. Net metering customers will be required to move to Rate 7.

As proposed by SCE&G, net metering is not based on the "classic" model described above. SCE&G will install two meters to track the "time of use" of power consumed used as well as "time of use" of power generated. Predicting time of use/demand charges is quite complex and neither customers nor the power company have "time of use" data or "15 minute peak demand data" to enable a customer to make any realistic prediction of what their costs will be under this rate versus the rate they are currently paying.

The customer's monthly bill has four components under Rate 7:

Summer (June – Sept) Peak	2pm – 7pm m-f		Winter Peak	7am – noon m-f

	Demand Charges	Demand Charges	Energy Use Charges	
Facilities	**Summer /kwhr**	**Winter /kwhr**	**kwhr**	
Charge	**OnPeak**	**OnPeak**	**On Peak**	**Off Peak**
$12	$10.25	$6.44	$0.07	$0.05

1. Facilities Charges -- $12 – always paid (covers customer equipment, billing etc). This charge is higher than for a non-net metered customer.

   Demand Charges – According to SCE&G, this "demand" portion of the charge is attempting to recover the capital costs of maintaining the capability to meet the peak demand from that household. This charge is calculated based on the customer's peak 15 minutes of usage each month. These peaks are likely to occur in the early evening when solar generation is low. These charges can never be offset by your net generation of power to the grid.

   This chart illustrates a potential late afternoon "15 minute peak demand" for a SC family:

AC2 Run non-stop	2500		Lights Various lights on in house	150
Water Heat 15 minutes	4500		TV Kids watching TV	250
Stove Cooking Chicken in oven - on 1/2 time	2500		Total 15 minute kw hour usage	12400
Burner Cooking Rice - 20 minutes on 1/2 time	1500		**Possible Summer Demand**	**$127**
Constant Phantom Load - fridge, clocks, etc…	1000		**charge @$10.25 kwhr**	

2. Peak and Non peak kilowatt hour consumption charges. – kilowatt hour charges for the electricity purchased from the grid. These charges are higher during "peak hours".

3. Power Generation Credits: If excess power has been generated by the customers equipment, SCE&G's billing department creates two power credits – a peak kw/hour credit and an off peak kw/hour credit. Each credit is applied only against the kw/hour charges for the power consumed during the matching time period. Any excess credit is carried over to the next month and applied against the appropriate time period kw/hour charge that month. Once a year, any excess credits are zeroed out. Since these credits, wipe out the actual retail charges, the customer is , in effect, receiving the retail rate for the power generated.

"Sell-all" Under PR-1

With this option, the customer generator will deliver all of their power to grid. None of their generated power is directly used at the location where it is generated. All power used by the customer is purchased from the utility just as it was before the installation local solar panels etc. The customer can choose any available rate for buying that power including staying with the rate they currently have. The most common rates are $.095 to $.105 /kwh.

The power company will purchase all the generated power using the PR-1 rate. The power company and the customer sign a only a one year "sales contract".
PR-1 has three components to the rate:

1. Facilities Charge : this is a fixed monthly charge to the seller of **$4**
2. Energy Payments for kilowatt hours generated: 5.6 cents to 7.8 cents/kwh.

Summer Peak	10am - 10 pm m-f	Winter Peak	6am -10am, 5pm- 10pm m-f

	Energy Payments for Power Generated			
	Summer		Winter	
Utility	On Peak	Off Peak	On Peak	Off Peak
SCE&G	$0.0778	$0.0588	$0.0636	$0.0559

3. Capacity Payments (/kwh generated): represent recompense for the customer's investment in capacity. The capacity payment is **$0.0155/kwr**

Since the energy payments and capacity payments are both based on kilowatt hours generated, they can just be added together in looking at home much a customer will be paid. So here is a chart which adds these charges together.

Seller Charges	Energy + Capacity Payments			
	Summer		Winter	
	On Peak	Off Peak	On Peak	Off Peak
$4	$0.0932	$0.0588	$0.0791	$0.0559

Palmetto Clean Energy – Apply to become a PACE Generator

http://www.palmettocleanenergy.org/

Palmetto Clean Energy is modeled on NC GreenPower. Both are non-profit creations of our local investor owner utilities, Duke Energy, Progress Energy, and SCE&G. These utilities offer their regular power customers the option of making a $4/month charitable donation to stimulate renewable energy generation in SC. This $4/month is tax deductable. The utilities pass this "donation" on to PACE which will use this revenue to pay renewable energy generators a "premium" for their renewable generation. Currently this premium is expected to be $.15/kilowatt hour generated.

With PACE, or NC GreenPower, contracts are limited to one year. Predicting long term rate of return is not possible.

PACE is till in the very early stages and will be limited to an initial 25 generators until revenue from "donations" allow opening up the PACE premiums to more generators.

Adding PACE to the economic calculation under the "sell-all" option results in a very attractive return:

Energy Credit + Capacity Credit + Pace Premium			
Summer		Winter	
On Peak	Off Peak	On Peak	Off Peak
$0.2432	$0.2088	$0.2291	$0.2058

*Note: the specifics described here apply **only** to customers of SCE&G in South Carolina. Each of the state's utilities have different rates and different rules. They even differ on things as basic as what constitute which months are the "summer months". Duke, Progress, and SCE&G each offer the two options describes here while the Co-operatives each have their own different offerings.*